




UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,060	09/09/2003	Peter J. De Groot	09712-332001 / Z-433	3834
26161	7590	03/14/2006	EXAMINER	
FISH & RICHARDSON PC			DETSCHER, MARISSA	
P.O. BOX 1022			ART UNIT	
MINNEAPOLIS, MN 55440-1022			PAPER NUMBER	
			2877	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,060	DE GROOT, PETER J.	
	Examiner	Art Unit	
	Marissa J. Detschel	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-42, 46, 47 and 50-57 is/are allowed.
- 6) ☒ Claim(s) 44, 45, 48 and 49 is/are rejected.
- 7) ☒ Claim(s) 43 and 49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on February 2, 2006, has been fully considered by the Examiner.

The amendments to the specification and claims have been fully considered and accepted by the Examiner. In view of these amendments, the rejections to claims 31-33 and 39-41 under the second paragraph of 35 U.S.C. 112 have been withdrawn.

Response to Arguments

Applicant's arguments, see page 14 of 22, line 1 to the bottom of page 20 of 22 under the Prior Art Rejections section, filed February 2, 2006, with respect to the rejections of claims 1-7, 10-12, 20, 21, 35, 44-46, 48, 49, and 54 under 35 U.S.C. 102(b) and claims 8, 9, 13-18, 22, 24-26, 29, 30, 34, 36-38, 42, 43, 47, 50, 52, 53, 55 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Takabayashi et al. (USPN 4,660,980) regarding claims 45 and 49 and Jung et al. (USPN 6,940,604) regarding claims 44 and 48 as presented below.

Claim Objections

Claims 43 and 49 are objected to because of the following informalities:

As to claim 43, the word "theesource" that begins line 7 of this claim on page 10 of 22 in the amendment filed should be "the source".

As to claim 49, the limitation "the test object" is presented in line 4 of this claim, and there is insufficient antecedent basis for this. Examiner suggests changing this to "a test object."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 44 and 48 are rejected under 35 U.S.C. 102(a) as being anticipated by Jung et al. (USPN 6.940,604).

In regards to claim 44, Jung discloses a method comprising determining an angle-dependence of an optical property of a test object based on scanning interferometry data for the test object (column 8, line 62 to column 9, line 10 and column 9, lines 32-36).

Regarding claim 48, Jung discloses an apparatus comprising:

A scanning interferometry system (Figure 4); and

An electronic processor (90) coupled to the scanning interferometry system, wherein the electronic processor is configured to determine an angle dependence of an optical property of a test object based on scanning interferometry data for the test object produced by the scanning interferometry system (column 5, lines 17-21).

Regarding both claims 44 and 48, Jung's device scans by the horizontal movement of the collimating lens of the illumination unit (column 4, lines 34-38 and column 6, lines 1-4). The angle-dependency of the optical property determined in Jung's device lies in the determination of the optimal inspection conditions by changing the incident angles of the lights to control the interference intensity. The interference intensity in the system is sent out by way of the electronic processor 90. As the incident angle varies, the interference intensity varies, and conditions can be chosen for optimal inspection of the test objects. (column 8, line 62 to column 9, line 10 and column 9, lines 32-36).

Claims 45 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Takabayashi et al. (USPN 4,660,980).

Regarding claim 45, Takabayashi discloses a method comprising determining a thickness of a thin film on a test object comprising the thin film and a substrate supporting the thin film based on monochromatic scanning interferometry data for the test object (column 1, line 62 to column 2, line 13).

In regards to claim 49, Takabayashi discloses an apparatus comprising:

A monochromatic scanning interferometry system;

And an electronic processor coupled to the scanning interferometry system, wherein the electronic processor is configured to determine a thickness of a thin film on the test object based on monochromatic scanning interferometry data for the test object (column 1, line 62 to column 2, line 13).

In view of both claims, Takabayashi discloses that the light source used is monochromatic (column 2, lines 55-59). The scanning of Takabayashi is provided by driving a tuning fork deflector with a mirror mounted on the distal end of the tuning fork (column 5, lines 60-64 and column 6, lines 7-11 and Figure 6A). The electronic processor that determines the thickness of the thin film is in the form of a calculating circuit 36 that feed off a series of other calculating circuits 58, 60, and 62 (column 6, lines 11-49). Interference fringes are measured during this time, indicating a scanning monochromatic interferometry system.

Allowable Subject Matter

Claims 1-42, 46, 47, and 50-53 are allowed.

Claim 43 is objected to based on the minor informalities presented in this office action, but would be allowable if rewritten to overcome the minor informality.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 1 and 46, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus or method comprising varying an optical path length difference from a source to a detector in an interferometry system between interfering portions of a test and reference light at a rate that depends on the angle at which the test light emerges from the object being tested, and determining an angle-dependency of an optical property based on this variance of optical path length difference, in combination with the rest of the limitations of claims 1 and 46.

As to claims 43 and 47, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus or a method comprising varying an optical path length difference from a source to a detector in an interferometry system between interfering portions of a test and reference light at a rate that depends on the angle at which the test light emerges from the object being tested, and determining a thickness of a thin film based on this variance of optical path length difference, in combination with the rest of the limitations of claims 43 and 47.

As to claims 50 and 54, the prior art of record, taken alone or in combination, fails to disclose or render obvious an apparatus comprising a scanning interferometer that varies an optical path length difference from the source to the detector between interfering portions of the test and the reference light at a rate that depends on the angle at which the test light emerges from the object.

Pertinent Prior Art

The prior art of record and not relied upon is considered pertinent to applicant's disclosure. The prior art of record is de Groot et al. (USPN 5,135,307).

De Groot et al. discloses a laser system for measuring dimensional aberrations across a test object that detects phase-dependent characteristics of the test object while the laser system is being scanned across the test object surface.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa J Detschel
March 9, 2006
MJD



HWA (ANDREW) LEE
PRIMARY EXAMINER